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DERWENT-WEEK: 200611

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TITLE: Protein hydrolysate, used for producing  
cosmetics, adhesive, surfactant, detergent, food or  
supplement, body cleanser, leather polish, building material,  
filler, builder or coating, is obtained by continuous  
enzymatic hydrolysis in extruder

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PATENT-FAMILY:

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AU 200215037 A	May 15, 2002	EN
DE 10054516 A1	May 16, 2002	DE
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APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
WO2002036801A2	N/A	2001WO-EP12461
October 27, 2001		
DE 10054516A1	N/A	2000DE-1054516
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AU 200215037A	N/A	2002AU-015037
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INT-CL-CURRENT:

TYPE	IPC	DATE
CIPS	A23J3/26	20060101
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CIPS	C11D1/32	20060101
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ABSTRACTED-PUB-NO: WO 0236801 A2

BASIC-ABSTRACT:

NOVELTY - Protein hydrolysates, obtained by continuous enzymatic hydrolysis of a proteinaceous substrate in an extruder, are claimed.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) production of a protein hydrolysate in this way;

(2) cosmetics, adhesives, laundry detergents, foods, food supplements, leather polishes, building materials, surfactants, fillers, builders and coating agents containing the protein hydrolysate(s).

USE - The protein hydrolysates are used in the production of cosmetics, adhesives, surfactants, laundry detergents, foods, food supplements, detergents, body cleansers, leather polishes, building materials, fillers, builders and coating agents (all claimed).

ADVANTAGE - Protein hydrolysates are often obtained from vegetable or animal waste. Although there are no problems in processing vegetable proteins or animal proteins containing collagen, it is difficult to process animal keratinous waste, e.g. wool, feathers, hooves, horns etc. One existing method of hydrolysis destroys part of the amino-acids and impairs the quality of the hydrolysate, whilst another not only causes irreversible destruction of

amino-acids but also results in the formation of artificial toxic amino-acids, e.g. lanthionine or lysinoalanine. An existing enzymatic method is slow and not suitable for continuous operation. The present process is suitable for hydrolysis of keratinous materials and gives hydrolysates suitable for a range of products containing substantially no toxic constituents. It operates continuously and is quick.

#### EQUIVALENT-ABSTRACTS:

#### BIOTECHNOLOGY

**Preferred Process:** The substrate is a natural proteinaceous product, preferably with a **water content** of 5-99 wt.%, especially a substrate containing **keratin**.

Hydrolysis is carried out at 20-95degreesC, preferably in the presence of a reducing agent, with a residence time of 1-60 minutes in the extruder.

**Preferred Enzymes:** The enzyme is Batinase (RTM), Proleather (RTM), Protease L 660 (RTM), Esperase (RTM), Alcalase (RTM), Savinase (RTM) and/or Purafect 4000 L (RTM).

Hydrolysis was carried out in a twin screw extruder with the temperature profile 30-50-60-60-60-60-60degreesC and a residence time of about 3 minutes.

Tests were carried out with (A, B, C) one or (D, E) 2 passes through the extruder. The extruder was charged with chicken feathers and, downstream from these, (A) no reducing agent or enzyme, (B) 10 wt.% reducing agent (sodium sulfide), (C) 5 wt.% sodium sulfide + 10 wt.% protease (Savinase RTM) or (D) 5, (E) 10 wt.% sodium sulfide in the first pass and (D, E) 10 wt.% protease in the second pass, all with respect to the feathers. The solubility of the product in an ethanol/water mixture (20/80 volume ratio) at 20degreesC with respect to total protein in the starting material was (A) 1.9, (B) 13, (C) 56, (D) 27, (E)

77%.

TITLE-TERMS: PROTEIN HYDROLYSATE PRODUCE COSMETIC ADHESIVE SURFACTANT  
DETERGENT

FOOD SUPPLEMENT BODY CLEAN LEATHER POLISH BUILD MATERIAL  
FILL

COATING OBTAIN CONTINUOUS ENZYME HYDROLYSIS EXTRUDE

DERWENT-CLASS: A11 A35 D13 D16 D21 D25 G02 G03

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ENHANCED-POLYMER-INDEXING:

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Polymer Index [1.2]

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